

CHAPTER XI  
Climatology and Air Quality

PART 11.3 Existing Environment

11.3.1 Precipitation

Seasonal Average:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUNE</u>
2.9"	2.18"	2.53"	.72"	1.67"	.19"
<u>JULY</u>	<u>AUG</u>	<u>SEPT</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
.96"	2.29"	.32"	.40"	2.66"	3.18"

Yearly Average: 20.00"

Mean Monthly: 1.75"

11.3.2 Temperature

Summer Range -32°F to +90°F

Winter Range -10°F to +40°F

11.3.3 Evaporation

Potential evapotranspiration of 18 to 21 inches per year.

11.3.4 Humidity

Normal for elevation in this area.

11.3.5 Wind

Average direction of prevailing winds from west and northwest.

PART 11.4 Effects of Mining Operation of Air Quality

11.4.1 Estimate of Uncontrolled Emissions

See page two of Air Pollution Control Plan included with this Chapter as Item XI - 1.

11.4.2 Description of Control Measures

See page four of Air Pollution Control Plan included with this Chapter as Item XI - 1.

11.4.3 Estimate of Controlled Emissions

See page six of Air Pollution Control Plan included with this Chapter as Item XI - 1.

11.4.4 Estimated Cost of Emission Control

Unable to calculate cost at this time.

PART 11.5 Climatological and Air Quality Monitoring

Operator proposes none as Air Pollution Control Plan approved

PART 11.5 Continued-

by State of Utah, Division of Environmental Health with no recommendations for monitoring. See letter included with this Chapter as Item XI - 2.

PART 11.6 Bibliography

**NONE**

## AIR POLLUTION CONTROL PLAN

This plan was designed to meet the requirements of the regulatory authority for the control of air pollution and fugitive dust emissions and is submitted under Part 784.26 as part of applicant's underground mining permit application. The calculations of uncontrolled emissions and control efficiency are based on information in Environmental Protection Agency publication AP-42, published in August 1977, and titled Compilation and Discussion of Air Pollutant Emission Factors, and more specifically Environmental Protection Agency published, "Compilation of Past Practices and Interpretations by EPA on the Air Quality Review of Surface Mining Operation", "Guidelines for Determining Best Available Control Technology" and "Survey of Fugitive Dust from Coal Mines". The data for these calculations is from applicant's "Preliminary Engineering Report, Crandall Canyon Property", and also bulletins published by the Utah State Climatologist, and information supplied by Arlo Richardson, Utah State Climatologist.

As per Paragraph (a) of this Section, applicant will establish an air quality monitoring program, if required by the regulatory authority, to provide sufficient data to evaluate the effectiveness of the fugitive dust control practices, under Paragraph (b) of this Section to comply with applicable Federal and State air quality standards.

As per Paragraph (b) of this Section, the following plan for air pollution control and fugitive dust control practices is submitted. The calculation of our uncontrolled emissions is included to establish a base from which to establish the dust control measures required by our surface operation.

## PART A

### AIR POLLUTION AND DUST EMISSION CONTROL PLAN SOURCES OF AIR POLLUTION AS CALCULABLE DUST EMISSION

Our first objective in this plan was to establish all sources of air pollution created by our surface operations and concluded that the only source of air pollution created by our surface operations was that of dust emissions. Our next objective was to determine which operations or features of our operations, were capable of creating calculable dust emissions. We determined the following operations, or features of our operations, to be capable of such:

- (1) From road travel by coal haulage vehicles
- (2) From road travel by access vehicles
- (3) From coal transfer onto storage pile from underground conveyor belt
- (4) From the process of loading coal with front-end storage loader
- (5) From storage pile as fugitive emission

## PART B

### CALCULATION OF UNCONTROLLED EMISSIONS

Our next step was to calculate, as closely as possible, the uncontrolled dust emissions from each of these operations or features.

They are as follows:

- (1) From road travel by coal haulage vehicles; we used formula:  $E = 5.9 (s/12)(S/30)(W/3)(0.8/1)(d/365)$   
where E = lbs emission/VMT  
s = silt content in percent (fig. at 18%)  
S = average vehicle speed, mph (fig. at 10 mph)  
W = average vehicle weight, ton (fig. at 77,750 lbs, 40 tons - an average between laden 117,000 lbs and unladen 38,500 lbs weights)  
d = dry days per year (no. of day less than 0.01 inches of rain, fig. at 35)

Calculation:

$$E = 5.9 (18/12)(20/30)(40/3)(.8/1)(35/365)$$

$$E = 5.9 (1.5)(.33)(13.33)(.8)(.096)$$

$$E = 2.99 \text{ lbs/VMT}$$

Conclusion: Total daily emissions from this operation would be, at 36 vehicular miles per day, approximately 107.64 lbs.

- (2) From road travel by access vehicles, we used formula:

$$E = 5.9 (s/12)(S/30)(W/3) (0.8/1)(d/365)$$

where E = lbs. emissions/VMT

s = silt content in percent (fig. at 18%)

S = average vehicle speed, mph (fig at 25 mph)

W = average vehicle weight, tons (fig. at 6,000lbs,  
3 tons)

d = dry days per year (fig. at 35)

Calculation:

$$E = 5.9 (18/12)(25/30)(3/3)(.8/1)(35/365)$$

$$E = 5.9 (1.5)(.833)(1)(.8)(.096)$$

$$E = .566 \text{ lbs/VMT}$$

Conclusion: Total daily emissions from this feature would be, at 30 vehicular miles per day, approximately 16.98 lbs.

- (3) From coal transfer onto storage pile from underground conveyor belt, we used .02 lbs. of dust emissions per ton of coal transfered per point of transfer as our best estimate of the uncontrolled emissions.

Calculation:

$$E = .02 \text{ lbs} \times 500 \text{ TPD}$$

$$E = 10 \text{ lbs per day}$$

Conclusion: Total daily emissions from this operation would be approximately ten lbs. per day.

- (4) From loading coal with front-end loader, we used .05 lbs. of dust emissions per ton of coal loaded as our best estimate of the uncontrolled emissions.

Calculation:

$$E = .05 \text{ lbs.} \times 500 \text{ TPD}$$

$$E = 25 \text{ lbs per day}$$

Conclusion: Total daily emissions from this operation would be approximately 25 lbs. per day.

- (5) From storage pile as fugitive emissions, we used the formula:  $E = .05(s/1.5)(d/235)(f/15)(D/90)$

where E = lbs emissions per ton of material

s = silt content in percent (5%)

d = dry days per year (fig. as 35)  
 f = percent of time wind speed exceeds 12 mph  
 (fig. as 15%)  
 D = duration of material storage as a function of  
 throughput tonnage compared to maximum storage  
 capacity (fig. as 6 days maximum)

Calculation:

$$E = .05 (5/1.5)(35/235)(15/15)(6/90)$$

$$E = .05 (3.33)(.15)(1)(.066)$$

$$E = .002 \text{ lbx emissions per ton of material}$$

Conclusion: Total daily emissions from this operation  
 would be approximately 6 lbs. per day with our storage  
 pile at its 3000 ton maximum.

SUMMARY OF CALCULABLE UNCONTROLLED EMISSIONS

(1) Road travel by haulage vehicles	107.64 lbs/day
(2) Road travel by access vehicles	16.98 lbs/day
(3) Coal transfer onto storage pile	10.00 lbs/day
(4) Coal loading with loader	25.00 lbs/day
(5) From stockpile	<u>6.00 lbs/day</u>
TOTAL DAILY UNCONTROLLED EMISSIONS	165.62 lbs/day

PART C

SOURCES OF AIR POLLUTION AS UNCALCULABLE DUST EMISSIONS

Our next objective was to identify all possible sources of un-  
 calculable dust emission. These include:

- (1) Wind erosion of road and disturbed areas
- (2) Dust forming debris spilled on roadway
- (3) Construction and site preparation
- (4) Reclamation operations
- (5) From coal while being transported

PART D

CONTROL OF AIR POLLUTION CREATED BY DUST EMISSIONS

The final objective of this plan is to apply the best available  
 control technology (BACT) to restrict with the highest degree of effi-  
 ciency all air pollution created by calculable dust emissions. However,

we will first address the sources of uncalculable dust emissions, as listed in Part C of this plan, and apply the dust abatement methods given in Part 817.95 of the O. S. M. Permanent Regulatory Program as follows:

- (1) To control dust emission due to wind erosion of road and disturbed areas, we will minimize the disturbed areas, revegetate disturbed areas not needed for mining operations, water periodically the road and surface travel area, to include a dust palliative mixed, as per manufacturers directions, with the water.
- (2) To control dust emissions forming debris created by our operations we will promptly remove and coal, rock, soil or other dust forming debris from the road which result from our operations.
- (3) To control dust emissions from our construction and site preparation, we will periodically water the road and surface travel area and we will wet and compact disturbed materials during placement and regrading.
- (4) To control dust emissions during reclamation operations, we will periodically water the road and travel areas and we will wet and compact disturbed materials during placement and regrading and will use an approved technique to lessen wind erosion after reseeding.
- (5) To control dust from coal while being transported, we feel the Utah State Code 27-12-146 offers adequate control in most instances.

To apply the BACT to the calculable emissions as described in Part A of this plan, we will apply them in the order described and calculated as follows:

- (1) To control dust emissions from road travel by coal haulage vehicles, we will gravel the haulage-access road and periodically water the road, the water to be mixed with a dust palliative as per manufacturers directions. We feel this should give us approximately 85% control efficiency and should reduce our emissions at this source from 107.64 lbs per day to 16.15 lbs per day.
- (2) To control dust emissions from road travel by access vehicles, we will use the same control methods as above with the same efficiency and reduce our total emissions from 16.98 lbs. per day to 2.6 lbs per day.

- (3) To control dust emissions from coal transfer onto the storage pile, we will spray the coal with water before it is loaded into the stockpile, we feel this will give us approximately 60% control efficiency and reduce emissions at this source from 10 lbs. per day to 4 lbs. per day.
- (4) To control dust from loading operation, we will minimize the fall distance while loading and we will also wet the coal in the stockpile before loading it into trucks. We feel this will give us approximately 75% control efficiency and reduce our emissions at this source from 25 lbs. per day to 6.25 lbs. per day.
- (5) To control dust emissions to wind erosion on the stockpile, we will periodically water the stockpile during dry climatic conditions. The water to contain a chemical dust palliative, mixed as per manufacturers directions. We feel this would give us approximately 90% control efficiency and reduce our emissions at this source from approximately 6 lbs. per day to approximately .6 lbs. per day.

#### SUMMARY OF CALCULABLE CONTROLLED EMISSIONS

(1)	Road travel by haulage vehicles	16.5 lbs/day
(2)	Road travel by access vehicles	2.6 lbs/day
(3)	Coal transfer onto storage pile	4.0 lbs/day
(4)	Coal loading with loader	6.25 lbs/day
(5)	Fugitive emissions from stockpile	<u>0.60 lbs/day</u>
	TOTAL DAILY CONTROLLED EMISSIONS	29.95 lbs/day

#### PART E

#### ANALYSIS OF PLAN'S OVERALL EFFECTIVENESS

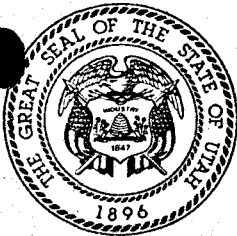
Using the controls as outlined in this plan, we feel we have not limited our ability to perform, nor have we overstated our ability to perform, procedures or operations necessary to make this plan functional. Its overall control efficiency is approximately 82% on the calculable emissions and we feel approximately the same for the uncalculable emissions. With this plan we can reduce our calculable dust emissions from 165.62 lbs. per day to 29.95 lbs. per day.



Scott M. Matheson  
Governor

STATE OF UTAH  
DEPARTMENT OF HEALTH  
DIVISION OF ENVIRONMENTAL HEALTH

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James O. Mason, M.D., Dr.P.H.  
Executive Director  
801-533-6111

DIVISIONS

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Environmental Health  
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OFFICES

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State Health Laboratory

533-6108  
July 23, 1980

Alvin E. Rickers, Director  
Room 426 801-533-6121

Bill Wolen  
Genwal Coal Company, Inc.  
P.O. Box 38  
Orangeville, Utah 84537

Re: Air Quality Approval Order for  
Genwal Coal Company Coal Mine  
in Crandall Canyon - Emery County

Dear Mr. Wolen:

On June 18, 1980 the Executive Secretary published a notice of intent to approve your proposed coal mine and associated operations. The 30-day public comment period expired July 17, 1980 and no comments were received.

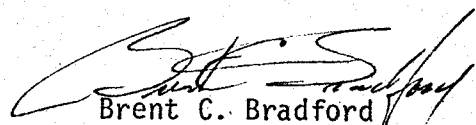
This air quality approval order authorizes the construction/development and operation of the coal mine near Electric Lake in Crandall Canyon in Emery County as proposed in your notice of intent dated March 25, 1980, with the following conditions:

1. Haul and access roads shall be graveled and surfactant sprayed as proposed to minimize fugitive dusts.
2. Conveyors shall be covered and be equipped with adequate water sprays to be operated as dry conditions warrant or as determined necessary by the Executive Secretary to minimize fugitive emissions.
3. Visible emissions from any point source shall not exceed 20% opacity.
4. Stockpile shall be sprayed with surfactant as proposed.
5. Production shall not exceed 150,000 tons/year without prior approval of the Executive Secretary, per Section 3, Utah Air Conservation Regulations.
6. A record/log of spraying done (type, date, amount and location) shall be kept and made available to the Executive Secretary upon request.

An initial compliance inspection will be required. Please notify us when your installation/construction is completed (ph.533-6108) so an inspection can be performed.

Since your controlled TSP emissions are less than 12 tons/year,  
you are considered a minor source for PSD purposes.

Sincerely,



Brent C. Bradford  
Executive Secretary  
Utah Air Conservation Committee

MRK:job

cc: Southeastern District Health Dept.  
EPA/Region VIII (Norman Huey)